ABSTRACT OF THE DISCLOSURE

A plurality of threshold values for binary-coding radiation image data of an object is stepwise set. Binary-coding processing is carried out on the radiation image data by the use of each of the threshold values and a plurality of binary images are generated. Isolated regions are extracted as primary-label regions, and a growth score for evaluating the likelihood that the primary-label region represents a growth is calculated for each primary-label region. The growth scores for the respective primary-label regions are compared with each other and a predetermined number of primary-label regions which are higher in the growth score than any of the others are detected as the prospective abnormal shadow region.